

RECORD

F. R. Fosberg

65

Collection and Field Note Book

No. 55

Sept. 14, 1959 - Oct. 25, 1959

(#40328 - #40722)

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west of Oakton (Don Stough's place and envi- rons)	14-15
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F. R. Foster, Jr.

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55

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nine month
collection

1959

Tennessee

1

Sept. 14 Ramsey Prong,
E. of Little Pigeon R.

Hypochilus Morellii, spider
that simulates a phalangid,
pretends to be dead when
molested, spin funnel-
shaped or campanulate
web under overhanging
rocks, over 5 cm. leg expanse.
one sp. in Appalachians,
others in E. Asia.

Virgin cove hardwood
forest -

- c *Halesia*
- c *Betula alleghaniensis*
- c *Acer nigrum* v. *glabrum*
- c *Acer rubrum*
- c *Tsuga canadensis*
- o *Magnolia acuminata*
- c *M. fraseri*
- c *Liriodendron tulipifera* 5' 5"
- o *Fagus grandifolia*
- o *Aesculus octandra*
- o *Lilium heterophyllum*
- o *Fraxinus americana*
- o *Prunus serotina*

Canopy 100' or more up, irregular,
tremendous trunks 3-5' dbh.
all sizes down. Spacing of
large trees very irregular.

- ~ *Aralia spinosa*
- ~ *Rhododendron maximum*
- Ilex montana*
- Viburnum alnifolium*
- V. cassinoides* ??
- Kalmia latifolia*

The general undergrowth is *Rhododendron*. This is 2-5 m. tall, generally irregular but generally dense, some opening, with ferns.

Mitchella is abundant on ground.

Mosses and hepatics very abundant on trees, rocks and ground.

Sept. 14 - Big Locust Trail, near Chimneys Camp ground. Trail leads through a fine patch of virgin forest -

- Acer negundo* var. *glabrum*
- Fraxinus americana*
- Cladonia lutea*
- Liriodendron*
- Asculus ostrya*
- Robinia pseudacacia*
- Carya*
- Tilia heterophylla*
- Tsuga caroliniana* (young)

shrub layer very sparse -
~~*Ilex montana* ??~~ *Haleia* ?
 young *Fraxinus* & *Acer negundo*
 young *Tsuga* *Arctostaphylos*
no *Rhododendron*

herb layer very rich -
Hepatica acutifolia (dominant)
Circaeifraga
Rubus
Trientalis
Viola
Solidago caesia ??
 special flora on rocks
Sedum ternatum
Polypodium, etc.

1959 Tennessee

Ledum and Cystopteris
on ~~the~~ mossy tree trunk
Ledum up to 2 m.
Cystopteris 1 m.

Greenbrier Cove,
Sept. 14 - Ramsay Prong of
Little Pigeon Creek, Sevier Co.
in virgin cove hardwood forest

- 40378 *Popularia*
occasional in canyon bottom
29 *Goodyera*
common on mossy rocks
and *Mitchella* mats
30 *Disporum*
rare along trail

- 31 *Fagus*
occasional
32 *Botrychium multifidum*?
common locally

Sept. 14 - Middle Prong of
East Fork Little Pigeon Creek, Sevier Co.
33 *Passiflora lutea* var. *glabra*
rare in rich bottom-land
second growth hardwood.

Sept. 14 - Chimneys Camp
Ground, West Fork Little
Pigeon River, Sevier Co.

- 34 *Botrychium dissectum* f. *obliquum*
common locally in virgin
cove hardwood forest

Great Smoky Mts. Nat. Lab 45

tall, leaves
clawed; sterile.
green with
off cream
from
at nerve
all pinkish white.
Tuberous.

medium sized tree.
sterile; bark ^{dark} gray

vine climbing 4 m.
in tree; leaves glaucous
beneath; sterile.

See
on ~~the~~
led
Pige

Fire in 1925

burned up

to parking

Sept. 11

Little

in -

40378

Pyrola

occa

29

Gordonia

corn

and

30

Dispor

rare

31

Fagus

occ

32

Botrychium

multifidum?

common locally

33

Sept. 14

~~same~~

- Middle Prong of

East Fork Little Pigeon Creek, Sevier Co.

34

Passiflora lutea var. *glabra*

rare in rich bottom-land

second growth hardwoods.

Sept. 14 - Chimneys Camp

Ground, West Fork Little

Pigeon River, Sevier Co.

34

Botrychium dissectum f. *oligophyllum*

common locally in virgin

cove hardwoods forest

shrub 3 m. tall, leaves green, not yellowish; sterile. leaves gray-green with markings of cream running in from marginal nerve. flowers pale pinkish white. rootstock tuberous. medium sized tree. sterile; bark ^{dark} gray

vine climbing 4 m. in tree; leaves glaucous beneath; sterile.

1959 Tennessee

Sedum and Cryptopteris
on ~~the~~ mossy tree trunk
Sedum up to 2 m.
Cryptopteris 1 m.

Greenbrier Cove
Sept. 14 - Ramsay Prong of
Little Pigeon Creek, Sevier Co.
in virgin cove hardwood forest

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cove hardwoods forest

Great Smoky Mts. Nat. Rd 45

shrub 3 m. tall, leaves
green, not yellowish; sterile.
leaves gray-green with
markings of cream
running in from
marginal nerve.
flowers pale pinkish white.
rootstock tuberous.
medium sized tree
sterile; bark ^{dark} gray

vine climbing 4 m.
in tree; leaves glaucous
beneath; sterile.

- 40 335 *Cystopteris fragilis*
common in second-growth
- also in virgin cove hardwood forest
- 36 *Botrychium dissectum* f. *obliquum*
common in second-
growth *Euodendron* forest.
- 37 *Hepatica acutiloba*
very abundant, dominant
in ground cover

Sept. 15 - Blue Ridge Parkway
on the Mt. Mitchell area
between the Craggy Mts.
and some miles n.e. of Mt.
Mitchell. Pines are seen
along the parkway, reaching
down to an extreme low altitude
of about 4000', but a mile
have down to low. Spruces
about 5000'. Beech gaps,
also, in this area above 4500'.

Pinnacle Falls area:
open forest of mixed oaks
some large. *Betula lenta*,
Fagus grandifolia, *Ostrya*,
Pinus strobus, *Aspen*,
Thuja occidentalis.

leaves somewhat mottled.

Dense undergrowth 3-5 m
high of *Rhododendron maximum*,
R. sp. Kaloria, *Sorbus*,
Urtica acuminata, *Fagus*
sp.

Almost no ground layer
except occasional *Fagus*,
Mitchell's *etc.* a few ferns,
etc. ground layer much
better developed in these
places in shrub layer.

Down near stream *Fragaria*
canadensis and *F. caroliniana*
only. *F. caroliniana* has
habit of *Fagus* in the appearance
of branchlets, etc and
much larger, looser cones.
Grows on bedded ~~granite~~?
Emin quartzite.

ledges at upper falls.
Does not have the drooping
tip of *T. canadensis*.

The quartzite is in places
almost soapstone-like in
appearance, greenish gray,
lustrous.

Xanthoxylum at foot of
cliffs. *Rhododendron*
minus and *maximum*
on cliffs.

Sept. 15 - Linville Falls
quartzite ledges around
below upper falls

- 140338 *Tsuga caroliniana*
common
3 39 *Tsuga caroliniana*
common

- 2 40 } *Rhododendron minus*
4 41 } common

- 4 42 *Xanthoxylum*
common at foot of cliff

- 1 43 *Helopogonella nebulosa* or
in crevices in dry bed
of stream

- 1 44 *Asplenium*
rare in crevices of shaded rock

- 1 45 *Leucothoe*
rare in brush on cliff

On the southeast
slopes of Grandfather
Mt. along the part of
Rt. 22 connecting the
sections of the Blue Ridge
Parkway, there are large
spruce trees scattered
in the forest for a
short distance, apparently
at an unusually low
altitude, but altitude
not noted.

Burke Co.

- tree 12 m. tall, cones and
needles from under tree
— small tree 5 m. tall,
8 cm. dbh. leaves not
in place; cones from
beneath same tree
— shrub 2 m. long, pendent,
leaves coppery beneath.
— shrub 0.6 m. tall, sap
bright yellow, flowers
cream white.

shrub 1.5 m. tall.

Sept. 15 Linville Falls
Parkway Lot, Burke Co. N.C.
40345a *Pyrola*

rare, edge of deciduous
woods, under *Acer rubrum*,
otherwise only *Carya* sp.
nearby.

46 *Coralorhiza odontorhiza*
along trail, oak-hickory woods

Sept. 15 - trail near
upper Linville Falls
47 *Tsuga canadensis*
occasional.

Burke Co.

tree 25 m. tall, 4 dm. dbh.
cones and leaves picked
up under tree

Sept. 16 - Blue Ridge Parkway
photographed *Cornus florida*
at Tuggle Gap, *Phytolacca*
and *Rhus glabra* at m. 8.77.

Sept. 16 Shenandoah Nat. Park
near Beagle Gap, on Skyline
Drive. Weedy banks below
overlook. *Galium mollis*
very abundant.
Checked weeds in list

shrub 1 m. tall, leaves
green, not yellowish,
fruit pale green.

Sept. 16. Highway 12 just east of Beagle Gap
on wetland abutment
just below drive

40348

Crataegus

49 Crataegus

50 grass

abundant, probably
planted to hold bank

51 Vitis

Sept. 17 - Annapolis, Md.

~~in~~ in meadow used as
grazing field, unmowed for some time

51 Tridens flavus f. flavus

small colony with f. cubensis

52 Tridens flavus f. cubensis

abundant

shrub 2 m. tall, fruit
- green.

- shrub 1.5 m. tall,

- fruit red.

caespitose, culms
ascending to 1 m.

many vines

culms ascending,
spikelets pale greenish.
culms ascending,
spikelets deep purple.

Sept. 19 - 2 3/4 mi. w. of Oakton
(on Stony's place and
encompassed)

Old pasture - open in
1951 - now covered by rather
thick growth of *Pinus*
virginiana 3-4 m. tall
with some juniper.

A sharply defined
swale running - low
middle with no trees
but with several large
sized trees - *Platanus*
Robinia, *Fraxinus*,
up to 10 m. tall, with
considerable *Acer rubrum*
3-4 m. tall. There were
Panicum canadense 1-1.5 m.
plus *Eupatorium*
purpureum, *Helianthus*, etc.
This usually wet.

Sept 25 - Chain Bridge Flats,
Potomac River, D.C.

in open scrub on rocky
flat, covered in flood periods

4 403577
3 541

Quercus bicolor
Quercus bicolor

Wickham property -
a mosaic of patches of
Pinus virginiana, *L. rigida*,
hardwoods and hardwood
mixed with some pine
low hills, old
wooded over gullies,
flood plain of Difficult
Run and Little Fox Run,
old mill race, old
road - races, dam site?,
outcrop of Wissahickon
rocks, etc. Some wood
rather than second
growth. Some with
large trees: *Geopodium*,
L. fulva, *L. glabra*, *L. styraciflua*,
etc. Wonderful series
of successional
vegetation types.

Streams cut in about
5 m. with an occasional
hill higher than this.

small trees, 4 m. tall,
shrub 7 m. tall.

Sept. 24 - Sleepy Hollow

- 40355 *Cucumis sativa*
planted in garden
- 1 56 *Polygonum*
common weed in garden
- 1 57 *Mollugo verticillata*
occasional weed in garden
- 2 58 *Galinsoga*
common weed in garden
- 3 59 *Aster macrophyllum*
common in wooded
area around dwelling

Oct 5 - Air trip Washington
to New York, L.I. N.Y.
afternoon, hazy
flew south of Baltimore
and flew east across
Eastern shore
long numerous strings
of tidal marsh and wet
in from both sides
into the predominantly
cultivated land. On
the ocean side about
at mouth of ~~the~~
narrow part of Delaware

wine climbing 3 m. in
trees.
flowers dull rose pink

prostrate, flowers
pale greenish.
- ascending; rays white,
disk dull greenish.
- spreading by extensive
system of running
rootstocks; rays white,
disk yellow. (Brought
in from mountains
a few years ago and
planted, has since
become very abundant
locally.)

ray on both sides ^{dit} are
large areas of tidal
marsh and tidal
channels. Some very
large creeks or rivers
(Choptank) especially
on New Jersey side.

Pine barrens appear to be
open forest with closed
shrub or herb layers, when
viewed from air. Some areas
with closed or almost closed
canopy. More closed toward
northeast whereas more
extensive areas.

1959 France

Oct. 6 - flight N.Y. - Paris.
Brethany coast near
Charbourg - an almost
completely cultivated
landscape, dull brown-
brown, incredibly cut up
into rectangular plots
by hedges. A very few small
forested areas.

Encountered a south-
trending coast line - crossed
a peninsula then an
eastward or N. E. trending
coast with a belt of lower
bedding in a large river
mouth several miles out.

Coast trending about
east but it curved by - cont.
Coast continues east,
sandy, dissection of land
by bays becomes less. In a
nine month and half by

Went through a lot of water
east. Then came a small
cove ^{light is in the harbor} the land is dissected
by hedges but not so
finely as where we first
reached land. ~~There are~~
honey orchards. A few
small

This pattern continues for a large part of the way to Paris, then changes to large expanses of fields without hedges. Wagon.

Fortunately there
is a good many
small trees, and all
their leaves dead. There
has been no rain since
August and only a
rain since May.

These were affected more
but not burned. The
dry, sandy hills
were more or less
immediately beneath
them. I saw a small
edge of the head
of a blackstone burned,
but fine but not
yet entirely gone.
I saw some.

the forest grows all
around to have some
making with you I
am sure. I am writing
you a letter about
the situation in my country.
I think it is
not pretty dry.

183

Oct. 7 - flight from Bordeaux to
Abidjan via Bamako

Mostly at night. The horizon of Bamako almost entirely cloudy. occasional glimpses seem to show desert with no trees. 10 minutes before Bamako clear but very hazy. scattered trees with sparse irregular herbaceous (?) vegetation, patches of red soil. Vegetation becomes denser approaching Bamako. Surrounding the city but away from the Niger is disturbed savanna cultivated in places, bare eroded soil in places. The broad ravine (2-3 miles wide, at least) of the Niger is green. Patches of thin forest. Mostly cultivated patches. very clearly in hilled up rows, but not obvious what the crop is. Some grass. Bamako is a fairly large city. A large Cassia seems to be the principal tree, at least near the air strip, which is in the edge of the city. Several grasses are

abundant, especially what seems to be a Pennisetum about 1 m. tall, an Andropogon about the same height, and a Themeda (?) about 2-2.5 m.

The ravine is cut into flat sedimentary beds which form several series of cliffs and ledges on the sides.

The Niger here is already a broad river. The flood plain is wide, densely populated, partly cultivated, partly in orchards, partly grassy savanna, quite green at this season.

Left Bamako at 9:37. Left the plain, flying at 10,000 ft. west of south.

Green savanna, mostly trees irregularly. North rather closely spaced. Some areas are green, other brown. The ground is supposed to consist partly of water table of sand, partly of wide, irregular basins. Some areas are green, other withered. Dense population. Soil is very hard, rather reddish, with some exposed to, some very green.

however, and a small
thing of a grassy area
which is the same as the
one that was seen before
not really a forest it
is a grassy area with
some small trees and
bushes.

Small distances between
the villages are
quite small. The villages
are quite close together. Small
streams and rivers are
seen between the villages.

The streams and rivers are
quite small. The streams
are quite close together. Small
streams and rivers are
seen between the villages.

The streams and rivers are
quite small. The streams
are quite close together. Small
streams and rivers are
seen between the villages.

These areas are
to be partly grassy and
certainly to correspond to
the country as seen from
the air and although there are

from the air, a lot of
the Sudan is replaced there
in the interfluvial. Consider-
able water and some flooded
areas along streams.

That along the streams
green. No gallery forest
but thickly scattered
trees and shrubs generally
except in the interfluvial
part. A lot of grass
is scattered about and
the grass is very green.

Small gallery forest
is seen in some places
and a large meandering
stream is visible
in the air. The stream
and the forest are
very meandering. The
stream is very narrow.

The stream is very narrow
and the forest is very
meandering. The stream
is very narrow and the
forest is very meandering.
The stream is very narrow
and the forest is very
meandering. The stream
is very narrow and the
forest is very meandering.

18000 4 1/2 inch bandage 1 1/2

The large stream flows
more than half a mile
down at a slight angle and
in two waterfalls. Camps
are on each side of stream,
parallel with it, but
some distance away from
it. The hills with a few
forests not so abrupt as
those first noted.
Stream banks are low
and wooded except
where large boulders are

~~Superior Sunday~~

[illegible][illegible]

10- ~~Frank Taylor~~

The bottom quite wooded
down to edge of
the large stream. In places
too some patches of low
growth - a few trees scattered
over yellow forest in
almost vertical strip of pop.
The wooded patches lower
down wooded and
interspersed with grass lawn
etc. I think some of the
densely wooded of the

as we go on and on
we get farther and farther
very much grassier and
richer than before. The
more toward the interior
of the forest, the more
of forest, savanna, and
grass we encounter. The
less open forest, more
abrupt boundary between
forest and savanna or grass.
I mostly closed forest and
savanna.

Closed over grass & cover.

more abundant. There
is a small lake to be found
along the river, apparently
the result of a small
dam, probably occurring
on a wide flood plain,
and a very small lake

1904. (See heading southward
of trail). The channel
intersects somewhat
southward by rapids
southeast of this part
of stream. Just as it
crosses forms a series of
conspicuous parallel
strips, parallel to the
river, apparently repre-
senting an exaggeration
of the rectangular pattern
noted above. The stream
lined with grass, and
yellow spots, and is often
flooded. This sort of
marking is seen southward
of here, where the path is
a series of yellow, brown, and
is not so close or so parallel.

10. The same as above - it
again is with the stone
from the 1st. The soil is
very a sandy brown, a few
grass with a few small
developed dendritic network
of gallium forest - some small

and scattered trees in
the grassy area. Some
grasses are tall and
green. There are some
smaller trees and
bushes. The ground is
mostly bare with some
patches of grass.

There are some small
trees and bushes. The
ground is mostly bare
with some patches of
grass. There are some
smaller trees and bushes.

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trees and bushes. The
ground is mostly bare
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with some patches of
grass. There are some
smaller trees and bushes.

Oct 7 - Barracks

St. John's

*Peromyscus eremicus**Casuarina**Adiantum**Calceolaria**Cassia**Passiflora**Passiflora**Passiflora**Passiflora**Passiflora*Cultivated plants
Antigonon leptopus

90360 Oct. 7 - Barracks, French Sudan
Pennisetum
 dominant grass in
 waste ground around
 airport.

up to 1 m. tall; spikelets
 pinkish to deep rose.

Oct. 7 P. Anquedou

Rimba Forest, Sta.

In edge of secondary
thickets

4036 Labicea

occasional

2 62 (rub.)

rare

3 63 (munda)

rare

1 64 Phyllanthus

common

2 65 Rhabdopetalum

~~not~~ common

2 66 Dichapetalum

rare

2 67 Chasalia

occasional

1 68 (apoc.)

common

2 69 (Euph.)

common

1 70 Scytotopetalum

occasional

1 71 Mussenda

occasional

71a

occasional

45 m. alt.)

twiner, flowers white.

shrub 2 m. tall, flowers
white, very fragrant.
vine, hairs on fruits
vermillion.

scandent shrub,
fruit green.

small tree, branches
elongate, drooping;
petals rose pink,
very fragrant; fruit immature.
scandent shrub; leaves
pale beneath; flowers
white.

shrub 2 m. tall;
thyrse and corollas white.
vine, corollas bronze,
turning brown.
scandent shrub;
flowers yellowish; ripe
fruit red.
vine, sterile.

shrub 2 m. tall; enlarged
calyx tube white, corolla
yellow.
vine, sterile.

Oct. 7 - between Abidjan
and Adiopodoume

403718 *Carinata*

common in kola plantation
island

Oct. 7 - between Airport
and Abidjan

on flat open white

silica sand with scattered bushes.

72 *Mitracarpum*
common

73 (pub.)
common

74 *Emilia sonchifolia*
occasional

75 *Hedyotis*
common

76 *Borreria*
common

77 (sp.)
common

These woods appear to be
podagraceae. At least there are
many very good. The trees
are in fruit but have a consider-
able amount of orange
vegetation on open scrub. The
dominated by *Clodion* from sp.
with small flowers.

38 m (est.)

peduncles erect, corolla
white, fruit fleshy, dark blue.

flowers white

stems spreading,
somewhat ascending,
corollas pink.

flowers pinkish-purple.

stems spreading.

flowers white.

flowers yellowish,
plant scandent.

Langue d'adon - There is
a plantation area about 10
m from the road. The
area is of the same size as
second day. It is about
2 m tall, extremely dense
and tangled with vines.
A species of *Cathartus* is common.
In common. *Sibon* *in* *in* *in*
has been left. (sp.)

Oct. 8 - Adiopodoumé, 17 km. N. of Abidjan
in forest reserve

40378 (ll)

roadside in swamp

79 *Mucuna flagellipes* Vogl
common in edge of swamp

80 (Marant.)

very common in edges of
swamp

81 (Marant.)

rare, roadside in forest

82 *Carinata*

very common in edges
of ~~low forest~~ forest on low ground

83 (rub.)

common in scrubby
undergrowth in secondary
forest, banks of lagoon.

84 (ll)

common in scrubby

undergrowth in secondary forest

85 (moss)

on earth bank along road
in forest

same - in degraded forest

on flat well drained ridge of

86 (moss) *Anchomanes diffusus* Eng.
common

flowers greenish

large liana, climbing
in trees; flowers cream
color, changing to purplish
gray, pendent on
long cord-like peduncles,
peduncles erect; fruit
red, fleshy.

fruit triangular in
cross section, red, fleshy.
prostrate, trailing
flowering and fruiting
stems erect; leaves
pale beneath; corolla
white; ripe fruit dark blue.
scandent shrub.
hairs reddish; fruit
fleshy, yellow when
ripe.

subscandent shrub,
flowers straw color.

gray-green

~~sterile~~ petiole brownish green;
sterile

Oct 9 Fri B. Pueblo

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 10. Page 91 - 100

From Littleton, N. M.

The hills are covered
 with large boulders
 of granite. The granite is
 of a pinkish color and
 is very hard. The granite
 is very hard and is
 very hard.

The many positions of the
undisturbed vegetation.
Scattered and more or less
distinct spherules of
ice. Perhaps to be all
a canopy of medium trees
perhaps more or less
of these layers completely
closed. The lower layers
so in place.

Lower layer 2-6 m
almost devoid
of ground cover of
bedding, some debris,
etc.

Exocoelina
Exocoelina
Exocoelina
Exocoelina
Exocoelina
Exocoelina

I have a large tree
 introduced. There are
 two of them. The one
 is a large tree, and the
 other is a small tree.
 I have a large tree
 introduced. There are
 two of them. The one
 is a large tree, and the
 other is a small tree.

The first place we reached was a small cove on the west side of the island. It was a very good place to land.

At this place, the upper layer of the coral is very complete. The top coral layer is almost entirely missing. The lower layers are much thinner, but very clearly defined. Locally there are coral layers of fairly complete growth. In some places the coral layer is very sparse.

A good layer of sand is found in the cove.

There is a good deal of ground in the cove. The coral is very complete. It is about 20 m. high. The dense coral layer is 2-3 m. high. Abundant living. There are large trees but no fruit.

Swamp with enormous trees. The trees are rather irregular, or low. The forest is about 10 m. high. The ground is very rough. There are abundant, very large, thickened areas.

The ground is very good. It is very dry. The ground is very dry. The ground is very dry. The ground is very dry.

There is a good deal of ground in the cove. The coral is very complete. It is about 20 m. high. The dense coral layer is 2-3 m. high. Abundant living. There are large trees but no fruit.

Oct. 9 - Adespodoume, 17 km W. of Didiyan
along trail in secondary
forest on red sandy soil

#0397 *Hedyotis*
common locally

3 98 *Hedyotis*?
common

5 99 *Hedyotis*
common

40400 *Sabicea*?
common

2 01 *Carpolobia granifolia* Stapf
occasional

1 02 *Musanga smithii* R.Br.
common

same - in swamp
forest

1 03 *Macaranga standleyi* Pax?
common

1 04 *Mitragyna stipulacea*
common

3 05
common

same - around old dwelling
06 *Artocarpus altilis*
planted

25 m

stems ascending; ~~flowers~~
white.

stems decumbent;
corolla white
prostrate, corolla
bluish-purple, stigma
white. (flowers 3 or 4 mm)
prostrate; corolla white;
fruit fleshy, white outside,
dark red within.

shrub, m. tall; flowers
white.

5 m. tree 15 m. tall; flowers,
stipules and leaves
from ground beneath tree.

0 m.

tall tree with conspicuous
stilt roots.

large tree, specimen
from sprout.

large liana, leaves
red on lower parts,
tips long, whip-like.
leafless; flowers on
branchlets on lower
parts, near ground,
yellowish green.

30 m.

tree 15 m. tall, sterile, very
hairy.

Oct. 9 - Bako National Park
in tall rain forest

- 40407 *Marattia pinnata*
abundant on road cut
4 08 (*var.*) *Anchomanes difformis* Engl.
common in clearing

- 1 09 *Thonningia sanguinea* Vahl
rare
2 10 *Macaranga triloba*
common in edges along
road
6 11 *Carinata*
abundant, especially
along roads
4 12 *Eupatorium guadalupensis*
common along roadside
2 13 *Diplostegium* ~~*infractum* (Lam.)~~
~~*infractum* (Lam.)~~
common along roadside
4 14 *Hedyotis chevalieri* (Pavon.)
common locally along roadside
2 15 *Centotheca lappacea*
common along roadside
✓ 16 *Pteris*
local in dense part of

5-7 km. W. Sabayan

50 km

erect, petiole and peduncles
dull gray-green mottled
with paler; leaf
palmately compound;
spathe erect, ill-scented
with many maggots
in lower part. peduncles
gray-green, spathe
bronzes outside, light
green inside, pistillate
flowers black, staminate
white.

bracts pink

liana; sterile.

prostrate, scapes
erect; flowers white,
fruit scarlet

much-branched
herb. to 0.8 m. tall; heads
lavender.
erect herbs from horizontal
rhizome; corolla white.
erect

dark green

40417

- 3 18 ~~Randia~~ in undergrowth
Randia "acuminata"
in undergrowth
2 19 *Psychotria*
occasional in forest floor
2 20 *Pegonia quadriculata*
common on cut bank of road
1 21 *Aframomum*
in edge of forest along
road
1 22 *Endosiphon*
very common along road
4 23 *Carinata hirsuta*
common locally along road
4 24 *Hedyotis cavanensis*
common locally along road
1 25 *Cola*
in dense forest

- slender shrub, flowers
pale pinkish white.
shrub 1.5 m. tall.
leaves dark green, pale
beneath, flowers white.
leaves indurcent, purplish;
flowers orange. leaves
appressed to bark.
stem erect; flowers
yellow.
flower blue-violet,
tube ~~double~~ double,
curved white.
prostrate; fruits
very soft, fleshy, appearing
infested. ~~translucent~~ bright
orange.
erect from prostrate
rhizome flowers white.
shrub, flowers deep
orange within, lobes pale.

[illegible][illegible]

The greater part of the
tree and vine forms the
surface of the mountain
have small leaves
very few are
of the 2nd. - may be 1st. 2nd. 3rd. 4th. 5th. 6th. 7th. 8th. 9th. 10th. 11th. 12th. 13th. 14th. 15th. 16th. 17th. 18th. 19th. 20th. 21st. 22nd. 23rd. 24th. 25th. 26th. 27th. 28th. 29th. 30th. 31st. 32nd. 33rd. 34th. 35th. 36th. 37th. 38th. 39th. 40th. 41st. 42nd. 43rd. 44th. 45th. 46th. 47th. 48th. 49th. 50th. 51st. 52nd. 53rd. 54th. 55th. 56th. 57th. 58th. 59th. 60th. 61st. 62nd. 63rd. 64th. 65th. 66th. 67th. 68th. 69th. 70th. 71st. 72nd. 73rd. 74th. 75th. 76th. 77th. 78th. 79th. 80th. 81st. 82nd. 83rd. 84th. 85th. 86th. 87th. 88th. 89th. 90th. 91st. 92nd. 93rd. 94th. 95th. 96th. 97th. 98th. 99th. 100th. 101st. 102nd. 103rd. 104th. 105th. 106th. 107th. 108th. 109th. 110th. 111th. 112th. 113th. 114th. 115th. 116th. 117th. 118th. 119th. 120th. 121st. 122nd. 123rd. 124th. 125th. 126th. 127th. 128th. 129th. 130th. 131st. 132nd. 133rd. 134th. 135th. 136th. 137th. 138th. 139th. 140th. 141st. 142nd. 143rd. 144th. 145th. 146th. 147th. 148th. 149th. 150th. 151st. 152nd. 153rd. 154th. 155th. 156th. 157th. 158th. 159th. 160th. 161st. 162nd. 163rd. 164th. 165th. 166th. 167th. 168th. 169th. 170th. 171st. 172nd. 173rd. 174th. 175th. 176th. 177th. 178th. 179th. 180th. 181st. 182nd. 183rd. 184th. 185th. 186th. 187th. 188th. 189th. 190th. 191st. 192nd. 193rd. 194th. 195th. 196th. 197th. 198th. 199th. 200th. 201st. 202nd. 203rd. 204th. 205th. 206th. 207th. 208th. 209th. 210th. 211th. 212th. 213th. 214th. 215th. 216th. 217th. 218th. 219th. 220th. 221st. 222nd. 223rd. 224th. 225th. 226th. 227th. 228th. 229th. 230th. 231st. 232nd. 233rd. 234th. 235th. 236th. 237th. 238th. 239th. 240th. 241st. 242nd. 243rd. 244th. 245th. 246th. 247th. 248th. 249th. 250th. 251st. 252nd. 253rd. 254th. 255th. 256th. 257th. 258th. 259th. 260th. 261st. 262nd. 263rd. 264th. 265th. 266th. 267th. 268th. 269th. 270th. 271st. 272nd. 273rd. 274th. 275th. 276th. 277th. 278th. 279th. 280th. 281st. 282nd. 283rd. 284th. 285th. 286th. 287th. 288th. 289th. 290th. 291st. 292nd. 293rd. 294th. 295th. 296th. 297th. 298th. 299th. 300th. 301st. 302nd. 303rd. 304th. 305th. 306th. 307th. 308th. 309th. 310th. 311th. 312th. 313th. 314th. 315th. 316th. 317th. 318th. 319th. 320th. 321st. 322nd. 323rd. 324th. 325th. 326th. 327th. 328th. 329th. 330th. 331st. 332nd. 333rd. 334th. 335th. 336th. 337th. 338th. 339th. 340th. 341st. 342nd. 343rd. 344th. 345th. 346th. 347th. 348th. 349th. 350th. 351st. 352nd. 353rd. 354th. 355th. 356th. 357th. 358th. 359th. 360th. 361st. 362nd. 363rd. 364th. 365th. 366th. 367th. 368th. 369th. 370th. 371st. 372nd. 373rd. 374th. 375th. 376th. 377th. 378th. 379th. 380th. 381st. 382nd. 383rd. 384th. 385th. 386th. 387th. 388th. 389th. 390th. 391st. 392nd. 393rd. 394th. 395th. 396th. 397th. 398th. 399th. 400th. 401st. 402nd. 403rd. 404th. 405th. 406th. 407th. 408th. 409th. 410th. 411th. 412th. 413th. 414th. 415th. 416th. 417th. 418th. 419th. 420th. 421st. 422nd. 423rd. 424th. 425th. 426th. 427th. 428th. 429th. 430th. 431st. 432nd. 433rd. 434th. 435th. 436th. 437th. 438th. 439th. 440th. 441st. 442nd. 443rd. 444th. 445th. 446th. 447th. 448th. 449th. 450th. 451st. 452nd. 453rd. 454th. 455th. 456th. 457th. 458th. 459th. 460th. 461st. 462nd. 463rd. 464th. 465th. 466th. 467th. 468th. 469th. 470th. 471st. 472nd. 473rd. 474th. 475th. 476th. 477th. 478th. 479th. 480th. 481st. 482nd. 483rd. 484th. 485th. 486th. 487th. 488th. 489th. 490th. 491st. 492nd. 493rd. 494th. 495th. 496th. 497th. 498th. 499th. 500th. 501st. 502nd. 503rd. 504th. 505th. 506th. 507th. 508th. 509th. 510th. 511th. 512th. 513th. 514th. 515th. 516th. 517th. 518th. 519th. 520th. 521st. 522nd. 523rd. 524th. 525th. 526th. 527th. 528th. 529th. 530th. 531st. 532nd. 533rd. 534th. 535th. 536th. 537th. 538th. 539th. 540th. 541st. 542nd. 543rd. 544th. 545th. 546th. 547th. 548th. 549th. 550th. 551st. 552nd. 553rd. 554th. 555th. 556th. 557th. 558th. 559th. 560th. 561st. 562nd. 563rd. 564th. 565th. 566th. 567th. 568th. 569th. 570th. 571st. 572nd. 573rd. 574th. 575th. 576th. 577th. 578th. 579th. 580th. 581st. 582nd. 583rd. 584th. 585th. 586th. 587th. 588th. 589th. 590th. 591st. 592nd. 593rd. 594th. 595th. 596th. 597th. 598th. 599th. 600th. 601st. 602nd. 603rd. 604th. 605th. 606th. 607th. 608th. 609th. 610th. 611th. 612th. 613th. 614th. 615th. 616th. 617th. 618th. 619th. 620th. 621st. 622nd. 623rd. 624th. 625th. 626th. 627th. 628th. 629th. 630th. 631st. 632nd. 633rd. 634th. 635th. 636th. 637th. 638th. 639th. 640th. 641st. 642nd. 643rd. 644th. 645th. 646th. 647th. 648th. 649th. 650th. 651st. 652nd. 653rd. 654th. 655th. 656th. 657th. 658th. 659th. 660th. 661st. 662nd. 663rd. 664th. 665th. 666th. 667th. 668th. 669th. 670th. 671st. 672nd. 673rd. 674th. 675th. 676th. 677th. 678th. 679th. 680th. 681st. 682nd. 683rd. 684th. 685th. 686th. 687th. 688th. 689th. 690th. 691st. 692nd. 693rd. 694th.

One tree at a little distance
has great numbers of
epiphytes on its pinnae.

numbers.

of the soil as well as
to the soil, with rather
a fine layer that would be
called ~~the~~ emergent
plant with very much
relying on the soil as
much on the top surface.
The soil is abundant
in the surface layer
of the soil.
The soil is fine and
is flowering in the

Small flowers
General tone dull dark
green but many trees
have showing flashes
of young growth bright
green, tawny, or reddish.
Flowering also contribute
tints of yellow or yellow-
green, or brownish, & faded.

No fruit yet at all now.
 The individual trees are small
 and the amount of foliage
 is very low. The
 interior of the canopy is very
 dense and tangled with one
 branch of the tree in the
 center of the canopy.
 The upper branches are

Jack-in-the-box, a few
small mosses. There is a
very few and a few
in the canopy. The canopy
is very open, with a
few large trees and
many small ones. The
canopy is that of a very open
forest, with a few large
trees and many small ones.
The ground is covered with
a few large trees and many
small ones.

The vegetation is very open
and

On the ground, the
forest is a thicket of
the shrub *Leucaena*
tall, is of slender, erect stems
about 1-2 m., with all tangled
branches and twigs.

Leaves are small, very definite
but few.

On ground is a layer of
seedlings about 1-2 m. tall
covering perhaps half the
ground. Some *Leucaena*
but many others. Some
forming a dense growth
on roadside. A few ferns.

Had a *Chloroceryle*
brown fish, brown, small.
Went cultivated. A
large earthworm and

and

very small, with a
few large trees. The
canopy is very open, with
a few large trees and many
small ones. The canopy is
that of a very open forest,
with a few large trees and
many small ones. The ground
is covered with a few large
trees and many small ones.

On the ground, the
forest is a thicket of
the shrub *Leucaena*
tall, is of slender, erect stems
about 1-2 m., with all tangled
branches and twigs. The
ground is covered with a
few large trees and many
small ones. The canopy is
that of a very open forest,
with a few large trees and
many small ones. The ground
is covered with a few large
trees and many small ones.

Wet
19

2nd. Low dense grassy
bank of 7' and 8' across
broad strip of grass
about 1-2 m. tall mostly
an entropogon. Scattered with
with some admixtures
of smaller grasses and
a small
patches of dense shrub
Miconia, St. Paulina
apocyn, etc. occasional
other shrubs. Small
trees.

Black wet soil. said
to be wet 7 months of year.
becomes lighter brown and gray
granular, glistening about
10 cm. Water table 1 ft. deep
in rain.

Laudetia phragmitoides
Centroclosta rugelii
Raplia gigantea

Lighter higher dense
spots have lower sparse
vegetation, very little
humus accumulation. *Eleocharis*
isopodum, *apocyn*, *inornat*, etc.

Patches of 20' irregular
wood are unimpaired.
even more than most of
the grass.

toward the sea is a very
low broad ridge of white sand.

U. open sandy
space with vegetation
between shrubs - low
Rubiaceae, etc. tall
clumps of *Eragrostis linearis*.

Low dense woods in the
savanna are largely
of *Chrysobalanus*, with
Mitragyna, *Orthocentrus*,
Raplia, and a number
of other shrubs and
small trees. *Raplia* grows
to 20 m. tall. 20 m. low.
Ground largely covered by
a mat of dead
sheath fibers, these
perhaps 5-10 cm. wide,
1 cm. thick, stiff, curved.

The savanna is dom-
inated by burned patches that
it is said to be burned
over every 7 years.

A small area of 100 ft. x 10
ft. of *Andropogon*. Some 10 m.
broadly ridged. The
Andropogon is the
most extensive aspect.
with or without the
scattered low patches
of shrubs.

66 1/2 mi Port Forest

Flat of sandy sand gone
high of light dark reddish color
local type mat of *Ipomoea*
pes-caprae, *Portulaca*, *Sesuvium*
portulacastrum, *Cassipouira*, large
patches of *Sarcocornia* longifolia
Capparis on low sand
mostly the habit and
appearance of *Ipomoea*
of *Ipomoea* white sand

From 1/2 mi Port Forest to Grand
Bassam is mostly
coconut plantation,
of various heights and
ages and conditions.
Some very clear, some
cloaked with brush.
A few areas without
coconuts, irregular
scrub 1-3 m. tall, mostly
closed, on sand. Toward
Grand Bassam some areas
with scattered trees.

Oct. 10 - Mousson savanna,
back of Grand Bassam
in dense grassland
on wet black humic sandy soil
Cyrtosperma senegalensis
occasional

40426

S.E. of Alidjan

1 m.

scapes erect, brassy
green without, cream
and purple striped within,
spadix dark brown.

- 40427 (erect.) *Mesanthemum radicans* Koen.
common
- 28 *Stipularia africana* Beauv.
common, forming small
low patches
- 29 *Panicum parvifolium*
abundant, forming mass locally
- 30 *Rhynchospora cyperoides* Britt.
common
- 31 *Floscopa axillaris* C. B. Cl.
common locally
- 32 *Burmannia bicolor* Mart.
rare
- 33 *Cyperus iris*
occasional
- 34 *Trinera umbellata*
common
- 35 *Lauvagesia erecta* L.
occasional
- 36 (blue green)
common where there is bare mud.
- 37 *Heliconia hirtella* Sw.
common locally
- 38 *Trinera glomerata*
rare on open mud
- 39 *Rhynchospora minima*
common
- 40 (erect.) *Eulophia ^{cavii} ~~caesia~~ foliosa*
common, terrestrial
- 41
local, forming a patch

heads white

shrub 1 m. tall, flowers
white; fruit red, fleshyerect or lying against
other plant.

det. Faden '82

stem fleshy

flowers white.

stem very weak

petals white.

caespitose

sepals dark purple lateral
petals pink, lip yellow
with wide bright purple
margin.

40442 *Rhynchospora corymbosa*
very local

sage - in small patch of
low woods on undulating
ground in savanna

2 43 (Allen) *Tetracera acutifolia*
common

2 44
common

2 45 *Pycnopus cernuus* L.
very local

2 46 *Lygodium scandens* L.
occasional

2 47 *Chrysobalanus icaya* L.
commonest tree

sage on moist white

sand in savanna

1 48 *Cassytha filiformis* L.
common, parasitic on grasses
and sedges.

4 49 *Pycnopus affinis*
common locally

1 50 *Proseris indica*

3 51 *Andropogon*
dominant

1 52 *Xyris capensis* ?

1 53 *Panicum*
rare

2 54 *Ecleria*
common

pendent
shrub 3 m tall

pendent
shrub 3 m tall flowers
greenish

long 6 m tall, stoloniferous.

climbing in ^{small} trees.

small tree. flowers white

creeping over grasses and creep
stems yellow

creeping, leaves dictyocarpous,
fruiting stems erect.

small tufts, culms erect.

erect.

- 40455 *Ipomoea* ~~canescens~~ *canescens*?
 2 very common
- 2 56 *Aradelpheia erecta*
 occasional to common here,
 abundant in wetter ground.
 in open scrub low ridge of
 same, on brown white
 sand ~~open scrub~~
- 2 57 *Clusia pectinata paniculata* (Benth.)
 common
- 1 58 *Alchornea cordifolia*
 common
- 3 59 (und.)
 common
- 4 60 *Eragrostis linearis*
 common
- 1 61 *Ernia sonchifolia* (L.)
 common
- 1 62 *Cassia mimocoides*
 rare
- 3 63 *Mitracarpum*
 common
- 5 64 *Hedyotis*
 abundant

Oct. 10 east of Port Bonet
 on ~~flat~~ flat of quartz sand
 behind beach.

- 2 65 *Ipomoea pes-caprae* sp. *haukensis*
 common
- 3 66 *Boerhaavia "diffusa"*
 common
- 4 67 *Euphorbia glaucophylla*
 common on loose open sand

erect, flowers yellow.

erect tufts, very erect.

2 m.

- low shrub, 1-1.5 m. tall,
 flowers white, fruit green.
- small tree 4 m. tall,
 racemes pendent
- prostrate, leaves stiff.
- flower white.
- large erect tufts

flowers purple.

flowers yellow

flowers white.

prostrate creeps, stems.

- prostrate elongate, flowers
 - pink, leaves white beneath.
 leaves glaucous,
 distichous.

Long Coast

Post office

I have been thinking of you
and wondering how you are getting on.
I hope you are well and happy.
I am still here, but I am not
feeling very good at present.
I am sorry to hear that you
are not feeling well.

Travel to outside of town
about 4 miles
west.

Almond - same with 100% yield
 Reddest tree in the field
 is a Caper - has appearance
 of a lemon - 100% yield

Coffee & tea - none
cultivated (Coffee - cultivated)
No rice.

of fruit. The fruit
of the fruit is somewhat
dentured on each side
entire. No large arid on
traces

Nolzi River - occasional
agitation with some heavy
spindles & others. (2) *Scapho-
poda* 2. *Pygmaea* *Macropus*
Pygmaea *Pygmaea* *Pygmaea*
along road *Terminales*

Large Birds

Spathoclea strobilata as
before.

North of here there is no more
hunting.

Andromeda -
leaves green
flowers yellow
No counting.

hoods. Euphorbia tall
light colored trunks. Many
liana in shrub layer.
Hymenocallis rather secondary.
Shallotia common.

Keokuk is a dolerite.

Little north of this a
few Brasses and a few
lightening of ^{the} ~~the~~ ^{the} ~~the~~
at least locally.

diagnoses. Many *Praxinos*
very large *leiba* abundant.
Rapid transition to forest
@ 1000 ft. (1000 ft.) *Praxinos* *leiba*

Regular mixture of
bushes, savanna and
patches of closed forest
dominated by Ceiba also
Tournefortia clausenii (Lobos)

The ground is covered, about 2 m. tall. Some 10 m. of natural grass - *Chloris* *indica*, *Pennisetum* etc. with a number of *Trinaria* and *Alseodora*. *Setaria* *deplanata* common with *Leptochloa* *viridis* (varied). *Setaria* *deplanata* scattered as

the ground is all of one of wide distribution and that southward the wooded patches become smaller and more widely separated. Just a bit of *Setaria*.

Some patches of rather open woods. Much *Trinaria* and *Setaria*. *Setaria* *deplanata* scattered in scrub - *Setaria* *deplanata* common. Patches of *Setaria* *deplanata*, many *Setaria* *deplanata* separated by savanna.

This whole area is burned every year, or near by.

Canoe also used in a few of the forest.

A little more south, low hills, and a number of patches of wood and grass. *Trinaria* large trees and some

Spreading one, many *Setaria*. *Trinaria* *deplanata*, *Setaria* *deplanata*.

To east a small mountain, densely wooded.

From the savanna in a densely wooded area approach open forest or open scrub.

Villagers fairly frequent. The road though dirt is fairly good, wide, in places washboarded, or locally bumpy, but traffic over about 60 mph.

Little to north, wide stretches of grass with abundantly scattered *Trinaria*.

In patches of open and closed forest, and to east another small wooded mountain. Then an abrupt rounded hill covered on this side with *Trinaria* savanna. Some village. Soil here brownish gray.

Just a - on a hill - typical *Trinaria* savanna, with scattered small trees, closed grassy *Setaria* *deplanata*. Some *Trinaria*. In places a mass of *Setaria* *deplanata* with vegetation on it. *Trinaria* *deplanata*.

Oct. 11 - Cote d'Ivoire

15 km. n. of Abidjan, 15 km. of Labor Road, n.
in patch of rather
degraded rain forest
(Diospyros - Makanieta)

40470

occasional

71 Mesobotrya sparsiflora
common in understorey

72 Psychotria

rare on forest floor

73 Labicea

in edge of forest

74

75 Diospyros chevalieri

characteristic of this forest asso-
ciation

76 Merremia

77

78 (mamm.)

common on forest floor

Oct. 11 north of Labor

roadside

79 Persea verticillata
common

100 m

liana, sap blood red.

small tree fruiting ^{and flowering} in
branches and also just
above roots; pulp of fruit
red, pleasant, acid, edible.
leaves dark green above,
pale beneath; flowers white.
- liana, leaves coppery
- beneath.
sterile

sterile

flowers whitish

flower pale yellow. fruit
orange, glossy.

- flower white

Oct. 11 - southeast of Adjé River
in degraded mesophyllous
forest.
(Lam.)

40430

in edge of forest along road
3) *Ossidora problematica*
occasional in undergrowth

Oct. 11 - several km. s.e. of Zieroa
bridge over Adjé River
near large Yanga
in degraded mesophyllous
forest

2 82 *Hymenostegium caravillei*
common
1 83 *Clerodendrum capitatum*
occasional
1 84 *Leurochiton vogelia* T. Anders.
rare

3 85 *Olyra latifolia*
common in edge of forest
3 86 *Mallotus of positifolia*
common in edges and undergrowth.

Oct. 11 - Bridge over Adjé River

~~forming a tangled thicket~~
roadside

leaves of flowers white
small tree 2-3 m. tall,
branches decussate,
arching upward.
one leaf developed at end
of each, 2 at second node, a
third at terminal node. Stems
at this season.

25 m

small tree; flowers
lavender.
- ~~leaves~~ vines, flowers
- white, fragrant.
sterile

erect ascending to
erect 1.5 m. tall.

40487 *Passiflora foetida* var. *bracteata*
common

38 *Zonolobus rostratus*
in tangles of vines

Oct. 11 - several specimens of
Mudgeria, Dyeria, etc.

39 *Calocoba guigiana*
rare

40 *Tetracera ulnifolia*
common

Oct. 11 - southern edge of
savanna, ~~near~~ Singrobo, near Pako

in tall grass with
scattered *Borassus*

91 occasional, twining on grasses

92 *Borassus*
rare, in small pools
of water

93 *Lauvageria erecta* L.

94 *Anelasma seipum* A. C. S. var. *goleferum*
common det. Bailey 1992

95 *Bulbostylis*
occasional

96 *Panicum*
common

97 *Erodia*
dominant

vine
forming tangles, flowers
white, base of corolla
segments purple, sometimes

leaves ~~are~~ pale
white, hairy, caducous.
vine flowers dull
white to reddish, without

50 m

leaves lower and glaucous
flowers white

flowers white, sometimes
stems ascending, flowers
greenish white

stems weak, supported
by other plants.
erect, small tufts

40499 *Pennisetum?*

2

occasional

1 99

(grass)

occasional

2 513

(granitic outcrop)

common

1 01

(grass)

common

1 02

Labrus

rare

2 03

(comp.)

common

1 04

Schwenkia americana var.

common along roadside

1 05

(amar.)

occasional

2 06

Hibiscus

common in forest

2 07

(legum.)

common

Oct. 11 - south of Lomé

in low wet places along road
in mixed woods and savanna

2 09

Thalictrum

local

1 09

(sacanth.)

common

flowers white.

erect tuft

erect, ~~erect~~

flowers white

small flowers bright
yellow, leaves narrow
centertwining over grass and shrubs,
flowers rose purple.

red

v

flowers blue-violet.

leaves glaucous beneath,
erect, flowers blue-violet.

- 1 Oct. 11 - east of Sino,
south of Kona Bocca
in open savanna, tall
grass and scattered trees.
40510 *Chlorosporium tinctorum*
common

- 2 11 *Dulcostylis*
on bare outcrop of laterite crust
1 12 *Vernonia purpurea* (Lam.) DC. (10 specimens?)
rare
2 13 *Lechypomene*
common locally
2 14 *Zoaria diphylla*
common in road
1 15 *Borreria*
common
3 16 *Evolvulus "alsinoides"*
common on outcrop of laterite crust
2 17 (grass)
on bare outcrop of laterite crust.
1 18 (leg.)
rare
4 19 *Borreria*
common
1 20 *Borreria*
occasional
5 21 (rub.) *Octodon sutorum* Hieron
common
1 22 *Polygala arenaria* Willd.
rare
3 23 *Mitracarpum*
occasional
3 24 *Eragrostis*
rare

90 m

shrub, m. tall, flowers
bright yellow, fruit
immature

flowers pale purple

forming a mat

prostrate

flowers white.

prostrate

leaves glaucous beneath,

corollas white.

flowers white.

erect, calyxes red, corollas
white or very pale lavender.
root with wintergreen
odor; flowers purplish yellow

erect

40525 Indigofera

2 common

76 Vernonia rugulosa ?
rare

Oct 12 - trip to Livo Livo

In swampy area of Adogodoune
near Daphe Livo -Cytosperma congestum
is very abundant. Glossy
leaves 1 m or more tall, scape
about 1 m tall.Raphia gigantea very
abundant. Trunk covered
by curled galls. Fruit
dead. possibly the
species is monodactyl.Savanna with
plantation of young
Elais. Rolling open land,
with widely scattered
Elais, Borassus, and a few
small trees and bushes
a few termite mounds.In low spots large patches
of Cyatophorum common.
Some areas dominated by
Imperata. These bright green,
others by Imperata.Margin a transition
forest characterized by a
mosaic of savanna andleaf 1 m tall, flowers
reddish.shrub; rays pale green
without, maroon within.patches of low thicket and
forest. The savanna
has more bushes
and abundant termite
colonies. These mostly marked
by more luxuriant grass.
Spots like field of blocks
of bam.Secondary forest on
sand - Elais abundant.
Scattered clumps of bamboo.
Ahoya.Some cultivation of
sweet potatoes + manioc.
Coffee.

Beccari

Mussaenda abundant
along roads.

Cytosperma in low spots.

Sikensi

Gardens or low wet
ground.Plantains in market
also these names
a few crops in village.

La Mene

Many banana patches.
Forest much degraded.

Banan

Frants outcrop

Forest mostly destroyed.
Much clearing and thicket.
Scattered tall trees. Musanga
abundant

Surface soil rather gray.

N'Doué - intersection
of main roads. Fair
sized village.
Forest mostly destroyed
or very degraded.

West from here - banana
patches. Many young
trees but few tall ones.
Small pineapple patches.
Scattered large trees left
in clearings, mostly Alb.

Barbana here

Rather high, part of
flood plain submerged (photo)
But not - open low-wood,
some large Cuba. Open space
with *Peruviaea purpurea*.
Some bananas.

Current in river swift
river perhaps 100 m. to 200 m.
wide at bridge. ~~edges above~~

Trassale - small town.

Pineapple fields

Forest: Harad, some trees,
esp. Cuba, left. *Peruviaea*.
bananas. *Manihot*.

Steward - much clearing.
Large patches of *Moss nana*.
~~Much~~ *caraco*, partially shaded.
Red soil with much
small gravel. Rolling.

~~limited~~ *Peruviaea*
open low-wood of *Peruviaea*

A pineapple forest. Large
trees of several kinds, incl.
Triplachton, *Peruviaea*, *Gibb*, *Caraco*.
m. a. m. forming a
broken layer with a
thicker layer at perhaps
bottom. A rather dense
shrub layer, esp. of *Peruviaea*.
Many small *Peruviaea*.
Some large ones climbing
into trees, and locally
tangled on ground.

No climbing aroids.
few epiphytes in lower
layers except thin
moss on trunk.

Well developed ground
layer of reddish

low-wood ground *Peruviaea*
collected and *Peruviaea* *Peruviaea*
same, but *Peruviaea* *Peruviaea*
soil, very plastic, is here

bulldozed shows a
layer of small concretions
gravel - a mass of clay
and some vegetation
but is disturbed that it
is hard to make out.

Small winding
watercourses

Hopkinsonia *humilis* var.
a marantaceous liana climbing
into small trees.

Cynometra *sp.* is undergrowth
3 m tall

on ground *Adiantum*
neglectum *Pteris* *glaucina*

The shrub layer is
open enough to walk freely.
No palms seen.

This stand gives the
impression of being rather
little disturbed.

Here the road cuts
through the soil there is
a clay layer about 1 m.
with some small gravel
of concretion in upper part,
then a mass of concretion
abruptly distinct from
the clay, its surface
roughly following that
of the ground. Some
quartz fragments mixed
with it.

Most of this the
soil now becomes
dark red, with gravel.

A good stand several
m. tall, has tree 35 m ⁴⁰
m. tall, a nearly closed
canopy but very irregular
in height at 15-25 m.
and a lower dense shrub
layer 2-5 m.

Plants of all kinds of
layers of seedlings, etc.
ferns, etc.

Some lianas but not
~~very~~ very many.

The layering is very
very indefinite.
The shrub layer, which is
most definite, seems in
places to be two layers, one
about 2-3 m, the other 3-5 m.

Walking camp.

2 spp. *Chrysophyllum* prominent,
and *Gigaditum*, with
sculptured tall clear limbs
for tree a chocolate
colored clay with scattered large
low rounded mounds
made by termites. The mounds
are 1 m. high, 2-4 across.

In openings where trees have
fallen are dense tangles of
lianas, saplings, etc.

There are practically no climbing aroids, and only thin mossy epiphytes large on trunks. Almost no vascular epiphytes seen. *Massandra seedling* has a whole of 3 leaves each.

Amegilla robusta is a numerous emerging butterfly at least as most of the large trees.

In places fairly large trees are only 15-20 cm. apart. In other places very widely scattered.

Calophyllum is said to be a component of this type, but has been removed from this area because of its valuable wood.

This type is mesophilous, though difficult to distinguish from rain forest. Should probably be separated.

The lack of climbing growth and of most epiphytes is distinctive in addition to the distinct floristic composition.

The margins, along the road, are densely tangled with lianas to a height of 5 m.

Photo
B-4-11

Just around Mabucí village the country is mostly well denuded, with scattered large trees. Patches of cultivation - banana, coffee etc. and tangled low thickets.

Just some areas of plantation - banana, cacao, and areas of forest mostly rather degraded. Some cacao mixed with bananas, not shaded. Some cacao without bananas and unshaded. Degraded forest over much entangled with vines.

Turned rt. off highway to South Divo Forest.

Forest rapidly improves. *Platycentron* conspicuous in branches of tall trees.

Forest ~~type~~ is being logged a little and little of it is in good shape. Trees 25-40 m. tall, trunks to 2 m. diam. - buttresses locally closely spaced, 5-20 m. buttresses to 5 m. high.

Large understory about 10 m. Some intermediate trees

Photo
B-4-12

Oct. 12 - Amatiore Forest Reserve
3 km. w. of Tiassale

40527 *Drypetes*
in tall primary mesophilic forest
common in undergrowth

28 *Paricaria*

rare, terrestrial

29 *Leptaspis cochleata*

common, forming patches
on ground

30 *Calacia*

common in undergrowth

31

common in undergrowth

32 *Pteris atrovirens*

occasional on ground

33 *Hymenostegium apzelii*

common

34 *Adiantum vogelii*

common on ground

35 (det.)

occasional in undergrowth
characteristic of type.

36 *Cynometra apzelii*

common in undergrowth

37 *Thonningia sanguinea* Vahl

rare on ground

38 *Trichomanes arorum*

on tree trunk

39

same - 10 km. w. of Tiassale

same

39 *Streptogyne gerontogea*

common, forming patches

60 m.

shrub 2 m. tall.

erect; fruit red.

culms ascending, all seen sterile.

much branched shrub,
leaves yellowish green
beneath, dark above,
liana, flowers cream white.

dark green

from fallen tree; flowers white

dark green

sterile shrub.

sterile shrub 2 m. tall
(~~tree~~ reaches 10 m.)

rose ~~pink~~ purple, bracts
stiff.

flat against bark.

60 m.

culms ascending.

- 40540 *Nothobuxus*
common locally in sparse
undergrowth
- 41 *Salacia*
common in undergrowth
- 42
in undergrowth
- 43 *Pavetta*
in undergrowth
- 44 *Randia*
in undergrowth
- 45 *Leptaspis cochleata*
occasional in undergrowth
- 46
in undergrowth
- 47 *Olea*
rare in undergrowth
- 48 *Puleissia*
rare, climbing on
tree trunk
- 49 *Sterculia elegantiflora*
common
- 50 *Assidora problematica*
occasional
- 51 (common?)
rare
- 52 *Caranta uniflora*
common on ground
- 53 *Corynanthe*
rare

- shrubs 1-1.3 m. tall; fruit
green.
- shrub 1 m. tall; flowers
deep red-orange.
shrub, sterile
- shrub, fruits blue,
fleshy.
spreading shrub, 1 m.
tall; fruit fleshy, yellow.
spineless, white, imbricate.
sterile shrub
- shrub 0.3 m. tall; fruit
red, fleshy.
climber - appressed
to tree trunk, fruit red.
- gigantic tree, (young
and flowers from ground).
seedling with 2 whorls
of 3 leaves; sapling with
terminal leaves in
whorl of 3, branches
in whorls of 3, 3 leaves on
a branch; sterile at this season.
- shrub; leaves glaucous
beneath, fruit dark reddish.
creeping, sterile. Leaves
pale with red vein, beneath.
small broken tree;
fruit and flowers from ground.
flowers whitish

- 40554 (area) *Nephthytis afzelii* Schott
 1 rare, on ground
 2 55 (Comm.) *Polypodium paniculata* Benth. det. P. Raven 1972
 occasional on ground
 7 56 *Diospyros*
 rare on ground
 1 57 *Psychotria*
 rare

~~58054~~

Oct 12 - North Ivory Coast
 Reserve

in tall mesophilous forest
 badly disturbed in places

- 4 58 *Olyra latifolia*
 occasional
 2 59 (Comm.) *Polypodium glaucum* (L.) Oakes det. P. Raven 1972
 locally abundant in rather
 new opening
 3 60 *Leuca*
 common along trail

- 2 61 *Psidium*
 common in tall trees,

- 1 62 *Thonningia*
 rare

- 2 63 (grass)
 occasional

- 1 64 (sapot.)
 occasional

- 1 65 *Pteris*
 rare on fallen log

erect, fruit orange.

erect.

slender small tree

fruit green.

stem green; fruit light
 blue flesh.

15 m

erect, caespitose, up to
 2 m tall.

det. P. Raven
 1972

herb to 0.7 m. tall.

inflorescence scarlet,
 fleshy, flowers greenish
 and yellow; fruit
 green turning black.
 specimens known
 to ground, ground below
 glaucous beneath,
 but not purple.

small tree, leaves silvery
 beneath, etc.

Oct 19 - Swamp forest
east of ~~Lagou~~ River.
has been water covered
for days.

Unequally closed forest
10-20 m. high.

No distinct stratifica-
tion except for ground
layer 1-2 m. tall of *Cyrtosperma*,
Aframomum, and various
vines.

Trees with thin layers of
moss. Scattered epiphytes
is *Rhipsalis caseyana*.

Neptrolepis sp.

Stipules of the *Cyrtosperma*
are quadrangular, with
a row of short prickles at
each angle. Leaves 1-2 m. tall
& born rather, *Calamus*
decussatus. *Ipomoea* single
in undergrowth.

Acrostichum,
Euphorbia, *Callocarpus*,
Symphoricarpos.

Many trees with
stilt roots, e.g. *Rapanea*,
Xylocarpus, *Symphoricarpos*.

Noting the largest tree with stilt roots.
The *Cyrtosperma* is common
in the interior of the swamp
but abundant only near the edge.

Water all the year.

In some areas a shrub
layer 2-4 m. little
Cyrtosperma. This is found
in the interior of the swamp.
A little *Rapanea* here.

1959

Trees to 25 m. or more high.
Leaves over 2 m. long & 5-10
m. wide. *Callocarpus* adpressed
Callocarpus *palustris*, *Trichos-
perma*.

Arise very abundant
a plant as seen
and to grow - here.

Base of stilt root trees
have accumulation
of litter that may be
fairly firm. These
and fallen trees have
an abundance of *Neptrolepis*.

Nearer the river this type
changes to a practically
solid stand of *Rapanea*
gigantea, completely
closed above, 5-10 m. tall,
open beneath, ground
covered by dead leaves,
in places ferns, some
admixture locally of
other trees.

This palm swamp
said to develop after the
other trees have been
removed. Raphia occurred
in other swamps.

The Raphia is monocaespitose.
Around the edges and
in places where the palms
are masses of *Phyllanthus*,
Cyrtosperma, *Aframomum*,
Hygromyza, *Stipularia*,
Asplenium latifolium (L.f.)
Weddell, and a large grass
on open water. *Nymphaea*,
Lotus, *Samolus*, *Azolla*,
Utricularia foliosa, *Potamogeton*,
a little
Ceratophyllum.

The water in the swamp
is dark brown.

Part of swamp has been
destroyed by fire.

Oct. 13 - Adiopodoumé, 10 km
roadside thicket
Cardiospermum
common

40574

?

Adiopodoumé
10 km
roadside thicket

vine, flowers white,
fruit inflated.

Oct. 13 - swamp east
of mouth of Agnely River
in open water
along road

- 40575 *Utricularia foliosa*
common
2 76 *Polygonum tomentosum* Willd.
abundant

- 1 77 *Ceratopteris cornuta*
rare, floating

- 3 78 *Aspilia latifolia*
same - roadside banks
abundant

- 2 79 *Phyllanthus*
occasional

- 3 80 *Asystasia cernuella*
common
same - edges of swamps

- 3 81 *Harungana madagascariensis* Lam.
common in edges of swamp

- 2 82
common

- 3 83 *Rhipsalis baccifera*
occasional epiphyte on lower
part of trees

- 2 84 *Ilex*
common

- 1 85 *Isplenium goidus*
rare epiphyte on tree trunk

west of Longon Igbo

flowers bright yellow
- emerged
- tangled herb,
flowering stems
ascending, emergent,
flowers pale pink

tangled herb, rays
deep yellow, discoidal yellow

tangled herb, stem
quadrangular; flowers
white with purple petals
- tangled shrub
2 m. tall, fruit yellow
to brown.
- shrub 2 m. tall,
flowers bright pink,
reddish petals.

stem erect

40586 Psychotria?

rare

2 87 Rhabdopetalum

occasional in undergrowth

2 88 (sub.)

occasional

1 39 (sub.)

1 90 Azolla pinnata

in water, floating

2 91 Calamus decuratus Maxim. & Wendl.

occasional in edge

~~Pteridium aquilinum~~

2 92 Cyrtosperma senegalensis

abundant at edges,

common inside

Oct 13 - ~~at~~ ~~at~~

L. of Songon agham

93 Pteridium aquilinum

abundant in a few

spots along road

in sandy ~~at~~ bankVign. (letter 19 Aug. 1971) says - has a
typical var. aquilinum except for small
expanding leaf apex

shrub 1 m. tall, fruit green

~~shrub~~ shrub

2.3 m tall, fruit immature

shrub, buds green

shrub, buds green

fruiting

green

erect, tang 5-1 m. tall,
fruit pendulouserect, leaves to 1.5 m.,
scapes to 2 m. tall,
petioles quadrangular,
prickles along angles;
scapes hexagonal,
prickles along angles.
spathe yellowish bronze
green outside, purple
and white striped
within, spadix almost
black.

10 m.

fronds erect, 1.5-2 m.
tall, appearing
indeterminate tips
still unfolding when
lower pinnae are mature.

Oct. 14 - trip to Bandama

Western part of Sabon
savanna. East area
planted or being planted
to Elaeis, Hevea, etc. etc.
The nearest of these
are being provided with
contour levees and cross
levees. Most have a
mat of legumes on ground.
All is on gray or brownish
sandy soil.

Forest around arm of
lagoon contains a substantial
portion of Elaeis, as a closed
very mixed forest. Parts
upon flat ground have
been transformed into cacao
plantations.

Margins of lagoon
have been cleared away of
Palisotia pyramidalis
very common to grasslands
of upper Amazonia.

Margins
very
tangled.

West of the arm of the
lagoon is a rich savanna
on sandy soil, rather mixed
and winding through the
forest. Brassia very common,
scattered a few small
~~stunt~~ trees and shrubs,
rich grass to 1 m., closed
layer to 10 m. ^{legumes}
Tephrosia, Indigofera, etc.
abundant in grass.
A large ^{Hybanthus} ~~Hybanthus~~ ^{Hybanthus} ~~Hybanthus~~
a smaller ~~Hybanthus~~ ^{Hybanthus} ~~Hybanthus~~ ^{Hybanthus}
dominant grasses, with
a slender Pennisetum also
abundant. A few seedlings
Brassia in grass.

The forest bordering this
is perhaps 25-30 m. tall,
with rather thin but
complete canopy of mist
bright, perhaps 10-15 m.
open above.

Shrub layer very thin,
irregular. Grass layer
abundant, of seedlings,
grasses, Marantaceae
herb brown, very sandy.
No really large trees,
few medium large (9-10 dm)
some lianas but rather
few. A few a Culecas
in the trunk.

Termite mound, holes common.

The top of the ~~thicket~~
is not obvious as the soil
is almost identical
with that of the savanna
- forest. The topographic
elevation is low. The
factors - man, or
elephant & buffalo.

The forest is old secondary
or at least much altered,
as it is abundant and
very large trees lacking.

Farther on a savanna
of almost pure *Hybanthus*
with scattered *Brassia*.
But most of these dead
from tapping for *baobab*
scattered large shrubs
or very small trees 3-4 m.
tall. The grass 2 m. or less
new series.

Secondary thickets
here and there with
Alsephyllus apiculatus,
Bridelia, *Lancea*, *cephala*,
esculentus. Tangled with
vines.

The *baobab* along roads.
In places the *Brassia*
is very abundant in the
savanna, especially where
ground is level.

In places thickets
extending from patches
of forest. These surrounded
tall *Brassia* trees. Taken
as proof that forest is
encroaching on savanna.

Locally *termite* mounds,
grass covered as abundant.
Possibly much more
general but only exposed
where tall grass is
burned off.

We find this alternation
of forest and savanna.
Then mostly a mosaic
of cultivation and thickets.
Small savannas, some
without *Brassia*.

Along *Caradama* River
secondary thickets about
8-10 m. tall, not tall & tangled
with vines, but more
open within. Some small
trees here, *Alse* abundant.
goss *Coos*. *Alchornea*,
Cailliea, *lancea* and
various other things in thickets.
Brassia *Brassia* in
meadows and along river.
Water is quite high.

Trassus have generally a swelling in the trunk about $\frac{2}{3}$ the way up. Has been suggested that this is due to a more adequate water supply at some period. This seems unlikely, as the feature is not correlated with terrain. More likely reflects natural increase and decline in vigor of tree, controlled genetically. Would be interesting to look at photos taken 20 years ago or more.

In Dabon area are large expanses of ~~the~~ plantation of *Clusia*, perhaps 8 m tall, spaced about 4 m. Crowns are closed, ground covered with closed herb layer. No shrubs. Epiphytic ferns locally, on trunks. Mostly not.

In the new wood part of the Dabon savanna that seems to be

Near Dabon ~~area~~ just exposure of 10-15 m thickness of more or less undisturbed laterite, under material made of rammed system dug away for road materials. On top there is a fine black soil. No sand. Just on top. Near Dabon.

East of Dabon in a road cut a layer of fine (fine-grained) gravel (basaltic) ~~about 1 m~~ thick or more, overlain by 2 m or more of reddish sand. The layer of gravel is sharply defined, rather irregular, roughly following the surface contour.

Oct. 14 - savanna between
Cosson and Mandibo,
east of Bandama River
in margin of forest patch.

40594

sub. X a (logon)

2

occasional

4

95 *Premna hirsuta*

common

5

96

common

3

97 *Uncaria africana*

same - in tall grass

2

98 *Indigofera pulchra* Willd.

common

2

99 *Tephrosia*

common

40600

Polygala multiflora For.

common

6

01 *Aspidos angustifolia*

common

4

02 *Hyparrhenia diplandra*

dominant grass

~~03~~

same - edge of thicket

2

03 (lab) *Psychotria opposita*

common

~~04~~

40595

scandent shrub.

shrub, flowers
- pale yellow; fruit somewhat
liana or scandent
shrub, flowers
red without, greenish
- clear within, fruit somewhat
liana flowers bronze,
fragrant.

suppulent - herb
- 1 m. tall, flowers red.
herb 1 m. tall, flowers
yellow.
- herb to 1 m. or more tall,
roots with wintergreen
odor, flowers big but
blue-violet.
- loosely branched
herb, heads range 0.5-1 m.
erect, to 2 m. tall, scarcely
tufted.

60 m.

scandent suppetent
herb, aromatic, flowers white,
fruiting calyx orange, fleshy.

- 42634 *Disphylea macana*
very common
- 3 05 *Bridelia*
very common
- 4 06 *Canoecephalus excelsus*
common
- 2 07 *Hedyotis corymbosa*
common on bare soil along road
- 2 08 *Borreria*
common along road
- same - roadside
- 1 09 *Borreria*
common
- 2 10 *Boerhaavia repens*
common
- 3 11 Oct 14 - ~~west of Labron~~
Rauwolfia vomitoria
on eroded latente

shrub 4 m. tall;
fruit fleshy, red.
shrub 4 m. tall, greenish,
fruits black when ripe.
shrub 3 m. tall, semi-
scandent, fruits
immature, seeds 2 white.
prostrate

prostrate, leaves white
beneath, ~~prostrate~~
~~ascending~~ flowers white,
two long limb, green base.

40 m.

||

ascending

prostrate, leaves white
beneath, ~~prostrate~~ ascending

90 m.

shrub, fruit orange.

Oct 15 - Banks Forest

Raphidophora common
on trunks and hanging.
Dactyloctenium *imbergeni* and
Hedyotis cerasalis along
roadside. also *Delantia*.
Begonia quadriloba,
Psychotria, *Strobil.*, *Marattia*
fascinea, *Heliconia*,
on cut banks.

Crinum *lanceolatum* a *Neurospora*
(moss). Some trees here
have many epiphytes.
Cynometra is a very tall
tree, young growth red.
from the first view
point a good view
of the top of a forest.
largely of *Cynometra* *lanceolata*, with reddish
crowns. Top was a
level. no convergent
in foreground. In back
as seen a different
set of forest.

A row

Agave the

beach, parallel beach
ridges of quartz sand
with thin rather poor
coconut grove with
carpet of *Schizanthus* *puberula*
low, patches of *Agave*
aliqua, *Diodes* *maritima*
etc.

The *Schizanthus* is
essentially the habit of
Portulaca *vaginatus*,
and *Sporobolus* *virginicus*,
forming a close fine green
carpet 7-10 cm. high.

A pen mangrove swamp
water at high tide knee
deep. *Rhizophora* *racemosa*,
Sonneratia *principalis* species.
The *Sonneratia* is with
widespread, arching roots
in places systems confluent,
elsewhere not. Scattered
shrubs of *Lobelia*, *Heliconia*
lilium, patches of *Portulaca*,
vaginatus (1 m tall), *Quercus*,
erubescens. The *Portulaca* is
scandent. The *Portulaca*
patches are rather thin.

In morning a lot of
these species except *Phryph*
and *Phryph* from tangle
with *Phryph* *reclut*,
Phryph *reclut*, *Phryph*
and *Phryph*.

Beach here is steep, up
to perhaps 25 m. about
20 m high. Light beach
then a low wall 10 m wide
with thin mat of *Phryph*,
etc. Then a small wall,
then a broad beach
perhaps 25-30 m. covered
by a solid mat of *Phryph*
reclut. *Phryph* *reclut*
in the.

Out of *Phryph* *reclut*

Oct. 15 - Banco National Park
5-7 km. n.w. of Abidjan
in tall rain forest in deep
sand soil.

40612 *Trichomanes capreoloides* Desv.?
common locally on road cut

1 13 *Heliconia muscosa*
common locally on road cut

1 14 *Heliconia chevalieri*
occasional along roadside

1 15 *Marantochloa*
occasional in edge of

3 16 ~~*Pipturus*~~ *Orthopteryx obliterata* (R.Br.) L.f.
climbing on tree trunk.

2 17 *Tea*

2 18 along road, semi-open

in undergrowth

3 19 *Coffea*
in undergrowth

3 20 *Parrotia*
in open, at edge of forest

3 21 *Ustera*
in undergrowth

~~22 *Hibiscus* *capensis*~~

Oct. 15 - Agoué. on
beach east of Abidjan

2 22 *Hibiscus tiliaceus*
rare in mangrove swamps

3 23 *Cassipourea*
common around edges
of mangrove swamp

6.0 m.

flower white

shrub

shrub 1.3 m., flowers
yellow, fragrant.

liana, flowers white,
very fragrant.

shrub 2.5 m. tall, flowers
white.

shrub 3 m. tall, calyx
pale green, corolla
dull purple.

0 m.

shrub 4 m. tall, flower
yellow, center very

dark maroon

low spreading tree.
branches elongate.

- 40674 *Rauvolfia vomitoria*
rare, margin of
mangrove swamp
25 *Scaevola*
in grass at edge of mangrove swamp
26 *Agelais robusta*
common on sand flat
27 *Scaevola*
common at edge of mangrove swamp
28 *Diospyros*
common on sand flat back
of beach
29 *Alchornea cordifolia*
margin of mangrove swamp
3 30 *Flagellaria guineensis*
common on sand flats and
on margin of mangrove swamp
2 31 *Phynopora racemosa*
dominant in mangrove swamp
3 32 *Cyperus maritimus*
common at edge of beach
1 33 *Diodia sagittata*
plant is rarest high water mark
4 34 *Hydrocotyle bonariensis*
common under trees
near edge of swamp
1 35 *Diospyros maritima*
dominant on sand flat
just back of top of beach
43 36 *Conocarpus erectus*
local at edge of mangrove swamp
1 37 *Avicennia nitida*
local at edge of mangrove swamp

- shrub 2 m. tall,
fruit green.
- erect, supported by a woody
- flowers white.
- shrub 1 m. tall, flowers
- white.
- sterile, shrub 2 m. tall
- low rounded shrub,
- sterile.
- vine, 1 m. long,
- flowers white, fruit red,
- fleshy.
- small tree with
- arching stilt roots.
- loosely scapitose
- prostrate, very fleshy.
- rhizome buried,
- inflorescences and
- petioles erect.
- prostrate, forming a
- loose mat; leaves very
- fleshy, flowers white.
- tall loosely branched
- spreading shrub; leaves
- fleshy - coriaceous.
- shrub tree 6 m. tall, leaves pale beneath.

40037 *Leavenia plumieria* (Lam.)
very local on beach

39 *Alternanthera nodiflora* R.Br.?
at top of beach

Oct. 17 - Bamboo Forest

At edge of scrub, in
a row of trees planted
by M. Aubreville in 1970
same species
at edge of ~~scrub~~ end of row
the tree is several times as
large as the others
farther in. *Calyptranthes*
alternanthera with *Alternanthera*

At the tower there seems
to be an abundance of great
earthworms. Their casts
are very abundant on
the ground in the forest.
There after sand is at
least 1-2 dm. and is very
rich with small holes, worms,
or casters. Certainly a
strong influence on the
surface soil.

low shrub 3 dm. tall;
leaves very fleshy; flowers
yellowish.
prostrate near forest.

This forest has a
much better developed
shrub layer than
in *Immaculata* or *Crucifera*.
Colombian or *Stalagmus*
in forest, and is possible
a thicket or more irregular
canopy. Distribution
of large trees about the
same. Perhaps somewhat
fewer intermediate ones.

Along a small stream
Calyptranthes palmata, with
conspicuous stilt roots,
is very common. Undergrowth
of large leaved *Ardisia* and
Zingiberaceae on ground
near road.

Oct. 17 - Banco National
Park, 5-7 km. n.e. of Abidjan
in ~~the~~ tangled
margin of forest along road

40640

2

occasional

2

41

Psychotria

occasional

2

42

Licania

occasional

1

43

Cratogeomys

occasional

2

44

occasional

2

45

Neilschmiedia

occasional

2

46

Randia

planted in arboretum

6.1 m

+

tangled scandent
shrub
shrub 15m. tall, inflorescence
purple, fruit green
vine, flowers green

fruits green

tree 15m. tall
fruits immature,
spines soft.
shrub.

5.2 m

small tree 4m. tall;
~~flowers~~ corolla bent
downward, tube green,
throat and lobes white,
odorless.

Oct 12. Trip by auto north
from Abidjan.

As soon as we enter the
schist area, the road will
have a covering of *Cycas*
cernuum, *Pityrogramma*
calamitacea and *Platanus*
linearis also *Heliconia* *scandens*.

The decomposing schist
is a bicolored mixture of
purple and pale green. The
soil is red clay.

Little difference in the
general secondary vegetation
between sand and schist.
Mussaenda abundant,
especially along roads.

The *Gleichenia*
is abundant, growing
parts with slight fern-like
texture, usually at base of
trees.

Antrodia *clavata* *mobilis*,
seedlings have a most
astonishing arrangement
of spines and stipules.

Crematospathum, *hookeri*,
Mapania, characteristic
of the psammohygrophilous forest.

The psammohygrophilous
forest is perhaps a bit more
hygrophilous than the
psammohygrophilous, but
the latter, for an equal
degree of hygrophily,
requires more rainfall.
Some of the plants in the
psammohygrophilous are restricted
to this type because
of the greater reservoir of
effective moisture in
the clay (see Mayent).

Bananas can be raised
here on the higher ground
as well as low, while
on the sand only successful
in the low moist parts.
(But this is probably true
only after clearing and
rather complete destruction
of the microclimate?)

Just before
about 40 km north of
Abidjan an extensive
banana fields with
only a few widely
scattered large trees.

Road toward Agboville -
forest destroyed, many
coffee plantations.

2 m
1 m

Large pit dug in soil - mostly
silt. In decomposition there has
been a relative accumulation
of the more resistant quartz
in the top meter. There is a brown
soil gradually changing to red.
At about 1 m it changes to
a red clay shot completely
through with vermicular
yellowish-gray clay. Some of
these with dead roots, ~~some~~ following
the vermicular, some with tubes,
some with nothing. Vermicular
1-2 cm thick. Some vermicular
of dark red clay.

Below this is a layer
of yellowish brown or
reddish brown clay,
stiff. Roots penetrate
to 5 m in this profile.
(Not penetrative lower)

Possibly the paler color
of the clay may be result
of reduction due to presence
of contents of dead roots.
Otherwise vermicular
appearance would be
be hard to explain.

An example of
paleohydrophil forest
probably rather degraded
a prominent shrub layer
and a canopy of medium
trees. Another piece with
scattered enormous
trees to 40-50 m in diam.

Nasutococcus local
sundatensis (Rabateana)
rather open canopy
perhaps 75-80 m.

under shrub layer
many *Napieria*, *Macaranga*
Muntingia, *Clusia*
Adiantum in shrub layer
not ground

Many grasses probably
originally of 1st or 2nd
different rather
together

Crematospathum choheri
C. macrostachyum
Calamus
Arenstrophium species
A. secundiflorum

Many leaf epiphyte
Also considerable
trunk and branch
epiphytes.

Yaple - Nord
 100 bectar
 A forest planted to
 two species - *aretia*
utilis - Kaye in 1930
 average spacing 2-4 m.

Growth now rather
 uneven, dbh. from 1 dm. to 5 dm.
 h. 2.5-3.5 m.

Dense under-story
 4-8 m. tall. not including
 any seedlings of the two
 planted species.

No thinning.

Second row - row of
 trees planted in 1936 - Kaye
curranii - larger trees
 reach to 7 dm dbh. 2 m tall.
 rows 1 m apart.

Space between filled with
 an understory of saplings
 2-10 m tall.

Third row was planted
 in narrow cut rows
 in the ~~gap~~ forest that
 was there ~~previously~~
 and as the trees grew
 the width of the strips
 cleared was increased.

trained, reserve
 of Yaple forest -
~~mostly *aretia*~~
~~small~~

Almost completely
 undisturbed
 scattered enormous
 trees, and *Laccoglossa*
gabonensis buttresses
 to 5 m.

Canopy at 5 m perhaps
 30 m. irregular, rather
 open. A dense under-
 story 3-10 m tall
 covered with buttresses
 10 m high. Great trunk
 rot holes, perhaps 40-45 m.
 Large leafed aroids on
 trunks.

Mopania very
 abundant on ground.

Perhaps 10 spp. ~~leaves~~
Pteris in forest
 a few *magrifica*
 a large banyan.

considerable variation
 in density.

Oct. 13 - Yapo Forest, south
of Yapo

4247 *Crassia*
in "pohyghykhile" forest

in mangrove thicket

~~48 "Crassia yapoensis"~~
~~occasional in trail~~

48 *Crassia yapoensis* Schum.
occasional in trail

49 (sp.)

occasional in undergrowth

50 *Riospyros*

occasional

51 (sp.)

occasional in trail

52 *Psychotria*

occasional in under-
growth

53 (thymel.)

rare in undergrowth

54 *Gymnodaphnoides longistylis* Hutch.

local in heaped up
decomposing leaf litter
between buttresses of a large tree

55 *Trichomanes erosum*

on buttresses of large trees

(moss?)

hanging from twig in
undergrowth

57 *Papadonia leucomera* Hutch. & W.

in understory

shrub 1.5 m tall
inflorescence white,
flowers white - stamens
yellow within, tube
doubly curved.

upper turgent hard,
0.6 m. tall, leaves whitish
lower by basal whitish
without.

sterile shrub 1.5 m. tall.

stems copious

fruit, fleshy, bright
blue.

slender shrub 1.5 m. tall,
fruit red.

shrub fruit red & fleshy.

white

prostrate

small tree, corolla whitish,
striped with red caducous.

- 40658 *Randia mollis*?
in undergrowth
- 59 *Mapania*
common on ~~the~~ ground
- 60 *Canthium*
occasional in undergrowth
- 61 (Euph.)
occasional in undergrowth
- 62 (Maec.) *Distenia*
occasional in undergrowth
- 63 *Lasiacanthus*
occasional in undergrowth
- 64 *Auratea*
occasional
- 65 *Pimenta Decorella paradoxica* Choisy
occasional in undergrowth
- 66 *Pandia macroantha*
occasional in undergrowth
in secondary forest
- 67 (maec.)
occasional in secondary forest

Oct. 18 - 25 km. north of Pidgeon
road cut in secondary
forest on decomposing schist

- 68 *Anthocleista superba*
seedlings
- 69 *Agrostidium cuneatum*
abundant, characteristic
of such cuts in this type of soil.
- 70 *Agrostidium smithianum*
common

erect shrub 2 m. tall,
fruit immature

shrub 2 m. tall,
branches distichous,
flowers white.

shrub

scandent shrub, corolla
whitish somewhat unisexual,
flowers bright yellow.

shrub 2 m. tall, seeds
green, fleshy.
tender shrub 2 m.
tall, flowers pendent,
white.

shrub 3-4 m. tall,
inflorescence pendent
flowers white, fruit green.

100 m

erect, 0.6 m. tall (note
curious spine arrangement).
stoloniferous; stems
erect.

climber in bushes,
all seen sterile

Oct 23 - Banks forest
deep ravine - has the
characteristics of
- disturbed forest, openings
in the canopy, bare places
on ground, etc. but probably
only the characteristics of this
sort of site. Many trees
have fallen.

Mapania coriandra and
Cyathia camerouniana
found locally here in
ravine, not general in
level part of the forest.

Rather few even fairly
large trees, though many
tall ones. Lianas fairly
abundant. Ferns, esp.
Marattia fraxinea, most
abundant than elsewhere
in this forest.

Soil yellowish brown,
much more clay than in
~~most parts~~ upper layers
of the tertiary sand.

Oct. 23 - Banks forest, - near base of Abidjan
in ^{rather} dense undergrowth in
rather open rain forest.

40671 *Polypodium scolopendria*
epiphytic

72

73

Asplenium africanum
rare, epiphytic on tree trunks

Another place on
high flat ground
Medium large trees
about 30 m. tall, spaced
10-15 m. Trunk to 5 dm. dbh.
canopy rather open.
Large *Euphorbia sanguinaria*
to 4 dm. thick, beautiful
corrugated bark.

Very sparse layer 15-20 m.
tall.

Thick shrub layer 2-4 m.
Canebrake and seedlings
very abundant on ground.
A few rather large
trees of *Lophura alata*.

low shrub, ~~fruits~~ scarcely
branched, fruits fleshy, very red.
resemble for very short erect ~~spikes~~.

42974 Cola

75 (only)

epiphytic

same headwaters of
Banks River
in wet forest in deep
wet ravine.

1 76 *Dracaena surc* ~~rosa~~ Lindl.
rare in undergrowth

2 77 *Isianthus*
rare in undergrowth

4 78 *Ctenitis*
common on ground

1 { 79
80

rare in low undergrowth

81 *Mapania ciliolata*
occasional on ground

3 82 *Caranta bracteata*
common on ground
especially along trail

Oct. 24 - *Adropodoume* 15 km.
in Clavis grove on Research
Station grounds

1 83 *Vittaria guineensis* Desv.
common on Clavis trunks

2 84 *Hedyotis* ~~arvensis~~ ~~arvensis~~ weed, in shade

3 85 *Phyllanthus*
common among weeds in shade

shrub 2.5 m. tall,
- fruit immature,
leaves distinctive, very
fleshy, buds white

20 m.

low shrub, sterile.

small shrub, fruit
dull lavender.

small shrub flowers green,
fruit orange

leaves dull, rather
reddish, green.
- prostrate, creeping,
fruiting branches erect;
fruits and calyces
bright orange.

on 17 *Abordia*
35 m. (map)

pendant leaves

protrudent, lower
white
erect.

- 40686 Mikania
 2 climbing over bushes
 2 87 Urera lobata
 edge of forest
 1 88 Nephrolepis biserrata
 abundant in trunks
 of trees
 1 89 Platysium africanum
 on trunk of tree, perhaps
 artificially placed there)

Oct. 25 - 33 km. n. of Abidjan
 steep road-cut in clay soil
 in ^{shaded} forest.

- 1 90 Vanda procumbens
 occasional
 2 91 Bonania
 common
 2 92 Lantana camara (C.D.C.)
 occasional
 1 93 Bonania
 rare

~~flowers~~
 vine flowers white with
 honey-like odor.
 - suffrutescent herb, 1 m.
 tall flowers rose pink,
 closed in afternoon.
 prostrate prostrate

densely caespitose
 with basal prostrate
 not overlapping.

100 m.

erect herb, ~~flowers~~ ^{corolla}
 white, funnel-form
 flowers white

erect, bracts deep magenta-
 purple, corolla white.

Oct. 25 Apapa Forest,
Botanical reserve

Cuvieria - small tree in
secondary thicket

Ptychopetalum - etc.

In these secondary tangles
leaf epiphytes are fairly
abundant in shrub layer.
Lycium - 10-12

Diospyros chevalieri, *Tanacetum*,
Mapania - very characteristic
of this forest.

Adansonia digitata - etc.

Preservation of some taken
for long but 7 days after
falling - older of 12 years.
depending on wood, etc.

Most delayed *Tanacetum*, *Endo*
phragma, *Karaya*, etc.

Calceolaria scandens,
C. angolensis on trunk.
Behavia (Apoc.) look
like a delicate climbing
fern.

Gardenia abekoute
Pidynma...

Klainea gaboriensis
has curious protruding
adventitious roots on trunk.

A rather open pelt-
hygrophil forest on somewhat
sloping ground
Irregular middle
story with many
lianas and thick
shrub layer with
rattan. *Mapania*,
Cauntonia, ferns abundant
on ground. A few scattered
very large trees.
In one of them, at top
of about 30 m. of bare
trunk, *Platycentron*
apricinum.

Apoc. guineensis - still
root,

U. esculenta

Parinari caphalana - very large
butterflies

Places where canopy
gets thick the shrub layer
thins out. Ground layer
stay about the same,
perhaps less *Mapania*.

Ipomoea hiernii - slender
shrub.

Drypis affinis - liana
with wicked retrorse spines.

Ants attached by cordiform
clasp twig with feet and
pincers. die that way

Oct. 25 - Yapo Forest, south of Yapo
in an area near Botanical Reserve

in tall old tree in forest 60 m.
40694 *Psychopetalum*

occasional in undergrowth

95 *Panda oleosa*
occasional in undergrowth

96 *Marant.*

common

97 *Trichomanes erocum*
abundant in trunks
of certain trees

occasional

99 *Agavea verperilis*
climbing branches of trees

40700 *Pandanus*

rare in undergrowth

01 *Cuviera*

in marginal thicket

02 *Stychnos aculeata*
common

03 *Palisota* ~~hastata~~ *hastata* C. B. C.
very local on ground

04 *Sabal*

05 *Psychotria*

abundant on ground

06 *Leg.*

in roadside thicket

flowers white, fruit crimson.

stems shrubs

much branched scrambling
herb. to 1.5 m. tall. Leaves
glaucous beneath,
fruits red.

- rhizome clinging to bark

fruit lavender.

- seedling, piece of young
- growth, fruit from ground.
shrub 1.5 m. tall, buds only.

small tree 5 m. tall,
corolla unicolored, pale
green without, white
within except reflexed
green lobes with white
midrib.

piece from erect branch
- from large bare sterile.
slightly accumbent,
bracts brassy purple.
- flower, green
flowers white

liana, fruits inflated
but hard purple.

#41907 *Muranga coccifoides*
 2 common in roadside thickets

09 *Cordia*
 rarely seen, parasitizing

3 89 *Marantoporus guineensis* Kuhn
 common

1 10 *Mapania*
 common

2 11 *Ipomoea arguta*?
 occasional in undergrowth

1 12 *Passerina abbeokuta* Hieron
 rare in undergrowth

1 13 *Polypodium punctatum*
 epiphytic high in tree

2 14 *Myrtanthus* (no V)
 occasional in undergrowth

1 15 (mauve)
 occasional

1 16 *Mapania*
 occasional

Oct. 25 - several km. N.W. of
 Yapo station
 in thick ~~secondary~~ tangled
 secondary scrub.

17 *Hedyotis*
 common

Tree 8 m. tall, caudex
 branching habit, leaves
 petiole, lobes subequal,
 white beneath; symphysis
 somewhat flattened.

- green, stipules purple.

The ant, though head
 was clinging with
 his mandibles.

- rhizome clinging lightly
 to trunks of trees and
 bushes. rarely fertile

- rosette, leaves dull
 green, reddish beneath.

- shrub 1-1.3 m. tall,
 inflorescence pendent, fruit

- crimson pink.

- Liang, stems.

ground fallen to ground.

erect to 1 m. or more tall.

- unbranched.

- fruit scarlet, fleshy.

slightly arborescent,

leaves not exserted by
 reddish beneath.

6.2 m.

wine, tangled in bush.

40713 *Memecylon*

3

rare

2

19 *Pentidea*

in edge along roadside

1

19a *Pennisetum*
abundant on roadsideOct. 2 - 40 km. n. of
Ibidjan,
secondary thicket
around road

7

20 *Psychotria*
common

1

21 *Mussaenda aff. yulington*
commonOct. 25 - Adiropodoune
along road

2

22 *Psychotria*
occasionalshrub 1 m. tall, flowers
blue.leaves ~~glabrous~~ white
yellow.branched erect herb,
1 m. tall, spike dark purple

60 m.

vine tangled in bushes;
corolla tubular, lobes dark
purplish, lobes ~~to~~
somewhat spreading,
green.twines, climbing in top of
small tree, corolla
bright yellow, enlarged
calyx lobes white.shrub 1 m. tall, fruit
green & red

notes made in the herbarium
of CRISTOM, a diopodum

Type of *Oldenlandia pilosperma*
M. B. B. and, it has been
published in the name as
Oldenlandia chevalieri B. and.

For de Campo, M. B. B. 02,421

2 colls. from Bance CRISTOM
without us. probably coll.
by Bance, 1470, 3717, 3762
from Attikoua, and are
in the CRISTOM in
addition to the B. and's.

4 species of *Parentia* in
Herb. CRISTOM -

- Parentia cordiformis* A. Chee
- ♀ *Parentia* Benth.
- ♀ *obovata* F. B. and.
- ♀ *uniflora* B. and.

send future book

+ F. L. Hovey - 71 Long Street

